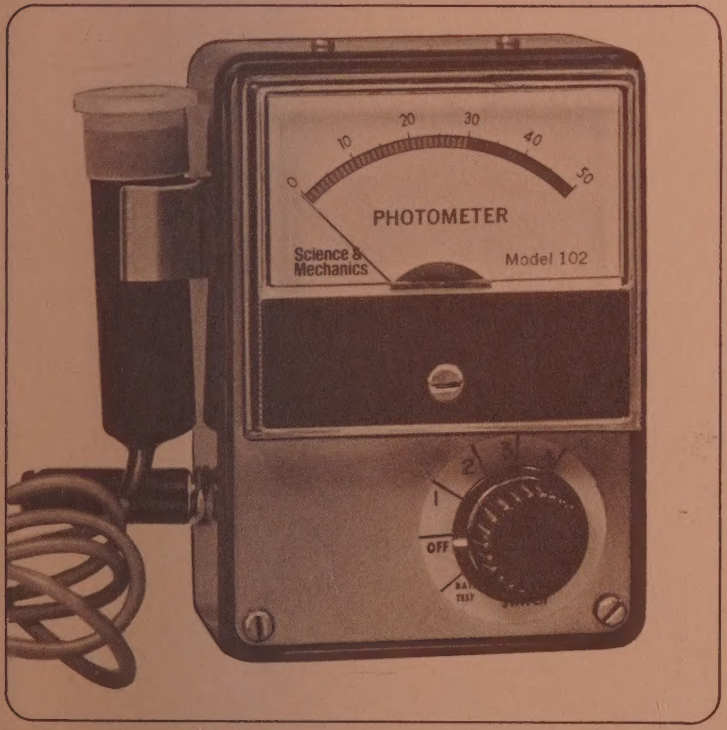
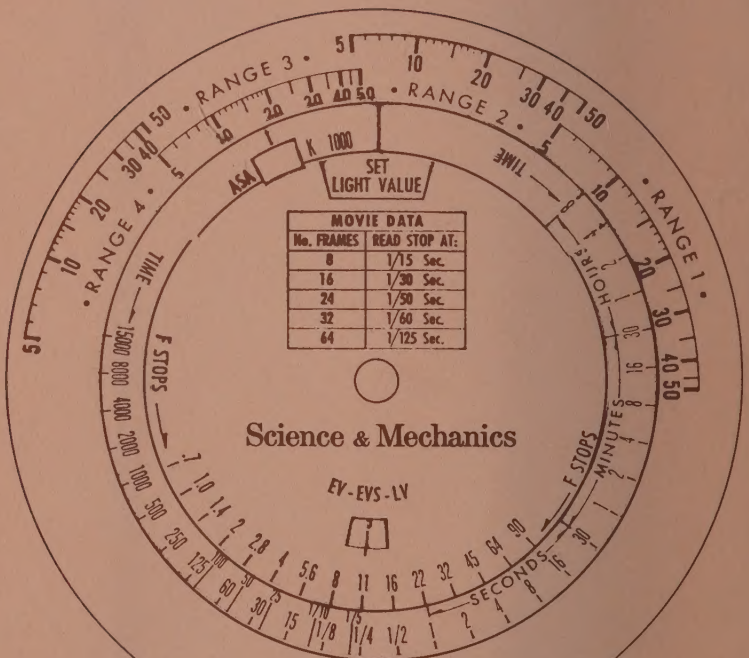


MANUAL FOR SCIENCE & MECHANICS' SUPERSENSITIVE PHOTO METER

MODEL 102

BY WILFRED M. BROWN

MP MASTER
MA30316


• RANGE 3 •
• RANGE 2 •
• RANGE 1 •
• RANGE 4 •
ASA
K 1000
SET
LIGHT VALUE
TIME
TIME
F STOPS
HOURS
MINUTES
F STOPS
SECONDS
MOVIE DATA
No. FRAMES | READ STOP AT:
8 | 1/15 Sec.
16 | 1/30 Sec.
24 | 1/50 Sec.
32 | 1/60 Sec.
64 | 1/125 Sec.
Science & Mechanics
EV - EVS - LV

INSTRUCTION AND OPERATING MANUAL FOR S & M MODEL 102 SUPERSENSITIVE PHOTO METER.

INTRODUCTION

Your Model 102 Science & Mechanics Supersensitive Photo meter is used by thousands of amateur and professional photographers; among them scientists, educators, medical doctors, dentists, engineers and research technicians. This unusual lightmeter covers moonlight to bright sunlight and reads exposures from 1/15,000 sec. to light hours. It is utilized as an exposure meter for everyday photography as well as for advanced photographic work.

Amateur photographers will find the meter opens up a new field in shooting under adverse light conditions. The meter can quickly pay for itself in savings from less wasted films and in versatility. Professionals will find the meter handy in copy work and in measuring studio lighting. They will verify that it can also solve many light-measurement problems when cameras are used with microscopes, telescopes, and closeup attachments. The meter is supplied with its standard probe, exposure computer and an attractive carrying case.

ZEROING YOUR METER

On receipt of your meter, you should inspect it thoroughly and note if the needle points to zero. If the needle points to the left or right of zero, you can zero it quite easily. To

do so, place your meter on a level table and make certain that the Range switch is in the "off" position. Use a small screwdriver very gently to adjust the screw, in the center of the bottom edge of the meter face, and bring the needle exactly to the zero mark.

TESTING YOUR PHOTO METER

Battery Test Information: The red-and-green arc on the face of your meter is for battery test purpose only. When the pointer of the meter falls in the green section, the Mallory RM 630, 1.4 volt mercury cell that powers the unit is good. When the pointer falls in the red section, the mercury cell must be replaced.

Making A Battery Test: To make a battery test, hold the black knob of the Range switch firmly and rotate it in a counter-clockwise direction. You will have to press hard as you are turning against a spring. Your meter should register approximately 40. Make a note of this reading for future reference. This is the reading you should obtain from a NEW AND GOOD RM 630 mercury cell used in this instrument.

On releasing the knob, the switch slips back in its "off" position. A battery test can be made with the probe plugged in or without the probe. The same reading should be obtained in either case. We recommend that you make a battery test whenever you are going to use your meter, especially if you have not used it for a considerable length of time.

Testing Its Functioning: The operation of this instrument is simple once you become familiar with it. First plug in the probe and then remove the clear plastic cap that protects

the photocell. Point the photocell of the probe toward a bare 75-watt bulb and put the Range switch on range one. With the probe about a foot away from the bulb, you should get approximately a half-scale reading. Now hold your thumb tightly over the probe, and switch upward through ranges two, three and four.

Range four is the most sensitive range, and in a normally lighted room, you should be able to read the small amount of light that penetrates your thumb! In a completely darkened room, you should get a one-half scale reading at 10 feet from the light of a common household candle. Remember that the clear plastic cap should never be used when taking reflected light readings.

USING YOUR PHOTO METER The probe of your meter is designed to give you accurate readings when pointed at the area of interest or at a spot of average illumination in an outdoor scene. Use the unit just like you would any commercial reflected-light meter. In taking portraits, you can hold the meter in one hand and use the probe extended outward in your other hand.

After taking a light reading of the subject to be photographed, use your S & M computer to determine the correct exposure. First set the film speed rating in the ASA film speed window, and then position the light-value line on the proper Range for the light reading recorded. Shutter speeds now appear opposite desired F-Stops.

Each of the four Ranges on the exposure computer must be used with its corresponding Range on the meter to obtain accurate exposures. Thus, a light reading taken on Range 1 of the meter must be set on Range 1 of the com-

puter to obtain the correct exposure. Readings taken on the other Ranges of the meter are calculated in like manner; that is, Range 2 on meter is calculated on Range 2 of the exposure computer, and so on.

MAKING AND USING YOUR DENSITOMETER

We have supplied complete information to make and use this practical and inexpensive densitometer.

DENSITY DETERMINATION CHART

Meter	Density	Meter	Density	Meter	Density	Meter	Density
1	1.69	14	.54	27	.26	40	.09
2	1.39	15	.51	28	.25	41	.08
3	1.22	16	.49	29	.23	42	.07
4	1.09	17	.46	30	.22	43	.06
5	1.00	18	.43	31	.20	44	.05
6	.91	19	.41	32	.19	45	.04
7	.85	20	.39	33	.18	46	.03
8	.79	21	.37	34	.17	47	.02
9	.74	22	.34	35	.15	48	.01
10	.69	23	.32	36	.14	49	.00
11	.65	24	.31	37	.13		
12	.61	25	.30	38	.11		
13	.57	26	.28	39	.10		

PAPER GRADE CHART

1.4 and over	use a grade 0 paper
1.2 to 1.4	use a grade 1 paper
1.0 to 1.2	use a grade 2 paper
0.8 to 1.0	use a grade 3 paper
0.6 to 0.8	use a grade 4 paper
0.6 or under	use a grade 5 paper

Accessories For Your Meter: Your S & M photo meter is designed to use plug-in probes. As stated earlier, the photo meter is supplied with its standard probe. An easel probe, a mini-probe and a special density probe for use in the construction of your densitometer, are available as accessories at $7.00 each. A microscope adapter can also be obtained for $5.00.

MAINTENANCE

Your lightmeter was designed to provide rugged, long-life, dependable service, with minimum maintenance problems. Certain routine maintenance will guarantee you infallible performance and extend the trouble-free life of your unit.

Toward this end, preventive maintenance will be your strongest ally. Normal care of the lightmeter during transportation will prevent almost all of the probems. A delicate electronic instrument should not be tossed haphazardly into a photographic gadget bag.

To insure proper readings at all times, take the trouble on occasion to clean the lens of the photocell by using lens tissue. Check the condition of the 1.4 volt Mallory mercury cell. Replace the mercury cell whenever excessively low readings are obtained as explained earlier.

In replacing the mercury cell, do not attempt to lift the upper contact to remove the old cell or insert the new one. The proper procedure is to ROTATE the upper clip until the old cell can easily drop out when the meter is inverted. Drop the new cell into place, and return the upper clip to its original position. Be sure the new cell is the correct type and that it is inserted with proper polarity; that is, the + side down.

SUMMARY

Some specialists have developed techniques for using this instrument in various scientific applications, including photomicrography, microphotography, densitometry, production photofinishing, copying and slide-duplication and even holography. We feel certain that you, too, will soon

be discovering new applications in your line of work for this most versatile photo meter.

We will be glad to hear from you when you come up with something new. We are always willing to disseminate technical information to advance the science of photography, as you will readily realize on receipt of your photo meter.

THIS IS YOUR METER GUARANTEE

We guarantee the quality of all parts shipped, however, we are not responsible for damage that occurs in shipment, or in use. If your meter arrives in a crushed or broken carton, please write immediately to S & M Instruments Division describing the condition of the package. Give us complete information; date of order, date of shipment, purchase order number, etc., so that we may process insurance claims promptly. As soon as your insurance claim has been filed, a new meter will be shipped to you.

If your meter does not operate properly, write a short letter also to S & M Instruments Division, describing the trouble. You will receive an immediate reply. In most cases, our experts will be able to tell you how to correct the trouble.

The most common meter complaints are due to broken photocells and shorted mercury cells. The photocells of the probes are encapsulated in high grade epoxy, but will not stand dropping on hard surfaces. If the photocell of your probe is broken, you can order a new standard probe for $19.95.

The mercury cell used in this meter should last for many months if you keep the Range switch off when the meter is not in use. If the Range switch is left on for a few hours

accidentally, the mercury cell will begin to run down. When the mercury cell is allowed to rest overnight, it will usually recover from such abuse. However, when in doubt, it is best to use a new mercury cell available from S & M for $.75.

You may return your meter to S & M Instruments Division at any time for complete inspection and repair for a service charge of $7.50. This includes the calibration and checking of the meter, photocell, and all other parts, but does not include the cost of replacing parts that may be broken in use or in shipment. These parts will be replaced and you will be billed accordingly. Whenever returning merchandise, be sure to tag it clearly with your name, complete address, and nature of complaint.

This meter is unconditionally guaranteed for 90 days from date of purchase against all factory defects.

MP MASTER
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